PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	14 SEP 2010

Applicant's or agent's file reference	FOR FURTHER ACTION
2540-1235	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 10/01941	09 July 2010 (09.07.2010)	31 July 2009 (31.07.2009)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - G06F 3/02 (2010.01)
USPC - 345/168

Applicant AVOCENT CORPORATION

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1. This opinion contains indications relating to the following items:

   ☒ Box No. I   Basis of the opinion

   ☐ Box No. II   Priority

   ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   ☐ Box No. IV   Lack of unity of invention

   ☒ Box No. V   Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   ☐ Box No. VI   Certain documents cited

   ☐ Box No. VII   Certain defects in the international application

   ☐ Box No. VIII   Certain observations on the international application

2. **FURTHER ACTION**

   If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

   If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

   For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	02 September 2010 (02.09.2010)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

| Box No. I | Basis of this opinion |

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒   the international application in the language in which it was filed.

   ☐   a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐   This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

   ☐   on paper

   ☐   in electronic form

   b. (time)

   ☐   in the international application as filed

   ☐   together with the international application in electronic form

   ☐   subsequently to this Authority for the purposes of search

4. ☐   In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Box No. V   Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	3-6, 8, 11-13	YES
	Claims	1-2, 7, 9-10, 14	NO
Inventive step (IS)	Claims	None.	YES
	Claims	1-14	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims	None.	NO

2. Citations and explanations:

Claims 1-2, 7, 9-10, 14 lack novelty under PCT Article 33(2) as being anticipated by US 6,664,969 B1 to Emerson et al. (hereinafter "Emerson").

Regarding claim 1, Emerson discloses a data processing system for routing keystrokes, comprising: an input configured to receive a first indication of one or more keystrokes of a keyboard to be routed to a client device, and configured to receive a second indication of one or more keystrokes of the keyboard to be routed to a target device (col 2, ln 26-27 - "Changes are transmitted to a remote console in communication with the managed server."; col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them."); a memory configured to store the received first and second indications (col 2, ln 22-27 - "The frame buffer may be periodically read to determine if the contents of the frame buffer has changed. Changes are transmitted to a remote console in communication with the managed server."); and a keyboard comprising keys and receiving one or more keystrokes by a user on one or more of the keys (col 6, ln 33-34 - "...the keyboard 52 for routing keystrokes..."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them."); a processor configured to determine whether the received one or more user keystrokes are to be routed to one of: (1) a client device and (2) a target device (col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."; col 11, ln 22-26 - "...most of these steps are performed by the processor 100..."."), based on the received first and second indications (col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them."); and the client device configured to receive the one or more user keystrokes based on the first indication (col 4, ln 23-25 - "The transmitted video data is encoded with special commands to permit the remote console C to interpret the data stream."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them.").

Regarding claim 2, Emerson discloses the data processing system of claim 1 as applied above. Emerson further discloses further comprising a target device configured to receive the one or more user keystrokes based on the second indication (col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them.").

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Supplemental Box

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Continuation of:
Box No. V.2. Citations and explanations

Regarding claim 7, Emerson discloses a method in a data processing system for routing keystrokes, comprising: receiving a first indication of one or more keystrokes on a keyboard to be routed to a client device (col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them."); receiving a second indication of one or more keystrokes on the keyboard to be routed to a target device (col 2, ln 26-27 - "Changes are transmitted to a remote console in communication with the managed server."; col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them."); storing the first and second received indications; receiving one ore more keystrokes by a user (col 2, ln 22-27 - "The frame buffer may be periodically read to determine if the contents of the frame buffer has changed. Changes are transmitted to a remote console in communication with the managed server."); determining whether the received one or more user keystrokes are to be routed to the client device based on the received first indication (col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them."); routing the received one ore more keystrokes to the client device based on the determination (col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them."); determining whether the received one or more keystrokes are to be routed to the target device based on the received second indication (col 2, ln 26-27 - "Changes are transmitted to a remote console in communication with the managed server."; col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them."); and routing the received one or more keystrokes to the target device based on the determination (col 2, ln 26-27 - "Changes are transmitted to a remote console in communication with the managed server."; col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them.").

Regarding claim 9, Emerson discloses the method of claim 7, as applied above. Emerson further discloses further comprising: receiving the one or more user keystrokes based on the second indication (col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them.").

Regarding claim 10, Emerson discloses the method of claim 7, as applied above. Emerson further discloses further comprising: facilitating routing of the received one or more user keystrokes to one of: (1) the target device and (2) the client device (col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them.").

Regarding claim 14, Emerson discloses a method in a data processing system for routing keystrokes, comprising: receiving an indication of one or more keystrokes to be routed to a target device from a user (col 6, ln 33-34 - "...the keyboard 52 for routing keystrokes..."); receiving one or more keystrokes on a keyboard by the user (col 6, ln 33-34 - "...the keyboard 52 for routing keystrokes..."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them."); and routing the one or more received user keystrokes to the target device based on the received indication (col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."; col 10, ln 13-14 and col 10, ln 23 to col 11, ln 18 - "The special commands are interpreted by software running on the remote console C...Software running on the remote console is configured to interpret the special commands and escape codes as described below....Special ANSI escape codes are sent only if the client used by the remote console C is configured to use them.").

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Continuation of:
Box No. V.2. Citations and explanations

Claims 4-6, 8, 11-12 lack an inventive step under PCT Article 33(3) as being obvious over Emerson in view of US 2006/0039404 A1 to Rao et al. (hereinafter "Rao").

Regarding claim 4, Emerson discloses the data processing system of claim 1, as applied above. Emerson further discloses routing of the received one or more user keystrokes to one of: (1) the target device and (2) the client device (col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."). However, Emerson does not explicitly disclose wherein the memory includes a low level keyboard hook configured to facilitate routing. However, Rao does disclose wherein the memory includes a low level keyboard hook configured to facilitate routing (para [0111] - "The packet capture mechanism 365 may use any hooking application programming interface (API) to intercept, hook, or otherwise obtain inbound and/or outbound packets of the client..."; [0166] - "...hooking to intercept the first packet...the application hooking is implemented via an application programming interface (API)."). It would have been obvious to one having ordinary skill in the art at the time of the applicant's claimed invention to modify the data processing system of claim 1 as disclosed by Emerson to include wherein the memory includes a low level keyboard hook configured to facilitate routing as disclosed by Rao to allow the data processing system to view and route the keystrokes to only the target or client device thereby ensuring that the processor is not slowed down by routing the keystrokes to both.

Regarding claim 5, Emerson and Rao teach the data processing system of claim 4, as applied above. Rao further discloses wherein the lower level keyboard hook receives the one or more user keystrokes before the one or more user keystrokes are sent to the client device (para [0111] - "...the packet capture mechanism 365 may be included in the agent 326 instead of or in addition to the filter 322. As such, the agent 326 may intercept network traffic. The packet capture mechanism 365 may use any hooking application programming interface (API) to intercept, hook, or otherwise obtain inbound and/or outbound packets of the client..."; [0166] - "...hooking to intercept the first packet...the application hooking is implemented via an application programming interface (API).").

Regarding claim 6, Emerson and Rao teach the data processing system of claim 5, as applied above. Rao further discloses wherein the lower level keyboard hook monitors the keyboard for input by the user (para [0111] - "The packet capture mechanism 365 may use any hooking application programming interface (API) to intercept, hook, or otherwise obtain inbound and/or outbound packets of the client..."; [0166] - "...hooking to intercept the first packet...the application hooking is implemented via an application programming interface (API).").

Regarding claim 8, Emerson discloses the method of claim 7, as applied above. Emerson further discloses further comprising: routing the one or more keystrokes (col 6, ln 33-34 - "...keyboard for routing keystrokes based on whether the remote console C is operational."). However, Emerson does not explicitly disclose to both the target device and the client device. However, Rao does disclose to both the target device and the client device (para [0084] - "...any computer can act as both a server by providing access to its resources to other computers, and can act as act as a client by accessing shared resources from other computers."; [0086] - "...remote access architecture having a remote access client for communicating to a network via a gateway or peer-to-peer to another remote access client or another computing device."). It would have been obvious to one having ordinary skill in the art at the time of the applicant's claimed invention to modify the method of claim 7 further comprising: routing the one or more keystrokes as disclosed by Emerson to include to both the target device and the client device as disclosed by Rao to ensure that the state of both the target device and the client device are in sync.

Regarding claim 11, Emerson discloses the method of claim 7, as applied above. However, Emerson does not explicitly disclose further comprising: receiving the one or more user keystrokes before the one or more user keystrokes are sent to the client device. However, Rao does disclose further comprising: receiving the one or more user keystrokes before the one or more user keystrokes are sent to the client device (para [0111] - "...the packet capture mechanism 365 may be included in the agent 326 instead of or in addition to the filter 322. As such, the agent 326 may intercept network traffic. The packet capture mechanism 365 may use any hooking application programming interface (API) to intercept, hook, or otherwise obtain inbound and/or outbound packets of the client..."; [0166] - "...hooking to intercept the first packet...the application hooking is implemented via an application programming interface (API)."). It would have been obvious to one having ordinary skill in the art at the time of the applicant's claimed invention to modify the method of claim 7 further comprising: receiving the one or more user keystrokes before the one or more user keystrokes are sent to the client device as disclosed by Emerson to include further comprising: receiving the one or more user keystrokes before the one or more user keystrokes are sent to the client device as disclosed by Rao to allow the data processing system to view and route the keystrokes to only the target device or client device thereby ensuring that the processor is not slowed down by routing the keystrokes to both.

Regarding claim 12, Emerson discloses the method of claim 7, as applied above. However, Emerson does not explicitly disclose further comprising: monitoring the keyboard for input by the user. However, Rao does disclose further comprising: monitoring the keyboard for input by the user (para [0111] - "The packet capture mechanism 365 may use any hooking application programming interface (API) to intercept, hook, or otherwise obtain inbound and/or outbound packets of the client..."; [0166] - "...hooking to intercept the first packet...the application hooking is implemented via an application programming interface (API)."). It would have been obvious to one having ordinary skill in the art at the time of the applicant's claimed invention to modify the method of claim 7 further comprising: monitoring the keyboard for input by the user as disclosed by Emerson to include further comprising: monitoring the keyboard for input by the user as disclosed by Rao to determine if the keystroke is intended to be routed to the target device, the client device or both devices.

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Continuation of:
Box No. V.2. Citations and explanations

Claims 3 and 13 lack an inventive step under PCT Article 33(3) as being obvious over Emerson in view of US 2007/0180407 A1 (Vahtola).

Regarding claim 3, Emerson discloses the data processing system of claim 1, as applied above. However, Emerson does not explicitly disclose wherein received first and second indications are saved in the memory for use in a second session with the user. However, Vahtola does disclose wherein received first and second indications are saved in the memory for use in a second session with the user (para [0045] - "...there could be a dedicated key combination to activate keyboard shortcut creation...and then a user only has to pick a single key or a key combination that will be later used with e.g., the "My own" button or Ctrl+Shift combination to access the linked view/content."). It would have been obvious to one having ordinary skill in the art at the time of the applicant's claimed invention to modify the data processing system of claim 1 as disclosed by Emerson to include wherein received first and second indications are saved in the memory for use in a second session with the user as disclosed by Vahtola to store the indications as saved shortcuts.

Regarding claim 13, Emerson discloses the method of claim 7, as applied above. However, Emerson does not explicitly disclose wherein received first and second indications are saved in the memory for use in a second session with the user. However, Vahtola does disclose wherein received first and second indications are saved in the memory for use in a second session with the user (para [0045] - "...there could be a dedicated key combination to activate keyboard shortcut creation...and then a user only has to pick a single key or a key combination that will be later used with e.g., the "My own" button or Ctrl+Shift combination to access the linked view/content."). It would have been obvious to one having ordinary skill in the art at the time of the applicant's claimed invention to modify the method of claim 7 as disclosed by Emerson to include wherein received first and second indications are saved in the memory for use in a second session with the user as disclosed by Vahtola to store the indications as saved shortcuts.

Claims 1-14 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.